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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the application of:
IGOR PALLEY ET AL.

Docket: 30-3744CIP2CPA

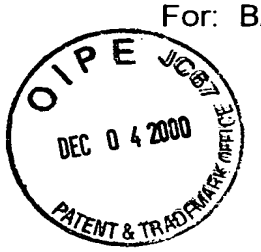
Serial Number: 08/747,471

Group Art Unit: 3727

Filed: November 12, 1996

Examiner: N. Eloshway

For: BARRIER UNITS AND ARTICLES MADE THEREFROM



Colonial Heights, VA 23834
November 30, 2000

BRIEF ON APPEAL

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Applicants hereby appeal to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner mailed November 30, 1999, finally rejecting claims 1-52. A Notice of Appeal was filed on May 30, 2000. The Commissioner is authorized to charge the Appeal Brief Filing Fee (37 CFR §1.17c)) of $310.00 to Deposit Account No. 01-1125. The Commissioner is authorized to charge $1,390.00 for a four (4) month extension fee (37 CFR § 1.17(a)(3)) for filing the Appeal Brief or any additional fees which may be required by this paper, or credit any overpayment to Deposit Account No. 01-1125.

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02 FC:118 1390.00 CH

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I. REAL PARTY IN INTEREST

The real party in interest is Honeywell International Inc., successor in interest to AlliedSignal Inc., which is the assignee of record.

II. RELATED APPEALS AND INTERFERENCES

There are no other related applications on appeal or subject to an interference that are known to appellant, appellant's legal representative or the assignee that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal. The parent of the present application, USSN 08/533,589, filed September 25, 1995, has claims (numbered 1-6, 8-38, 42-57, 74-76) under final rejection dated November 1, 1999, by the same Examiner, Niki M. Eloshway.

III. STATUS OF CLAIMS

Claims 1-52 are presented on appeal. These claims have been finally rejected in the Office Action identified above. A copy of the claims is attached in the Appendix under Section IX.

No claims are allowed.

IV. STATUS OF ALL AMENDMENTS FILED SUBSEQUENT TO FINAL REJECTION

There have been no amendments filed subsequent to the issuance of the Final Rejection mailed November 30, 1999.

V. SUMMARY OF THE INVENTION

The invention is a constraining band, a container assembly including the constraining band, a barrier unit, a blast resistant container assembly, and an improved container assembly, all of which have fibrous loops or knuckles for connection. The fibrous loops form an integral part of the adjacent surface. At least about 50 weight percent of the fiber component in the fibrous loops comprises substantially continuous lengths of fiber oriented in the hoop direction of the loops. These fibrous loops in combination with a connecting pin can withstand tremendous pressures and resist pulling apart, due to the strength characteristics and orientation of the fibers.

VI. ISSUES

The issues in this appeal are:

A. whether claims 1-6, 8-13, 16, 17, 20-23, 25-31 and 34 are unpatentable under 35 U.S.C. §103(a) over Lewis (USP 674,009) in view of Kolom (USP 5,054,635) and Prevorsek et al. (USP 5,545, 455);

B. whether claims 7 and 24 are unpatentable under 35 U.S.C.§103(a) over Lewis in view of Kolom and Prevorsek et al., as applied to claims 1 and 17 above, and further in view of Sholl (USP 3,611,512);

C. whether claims 14-15, 18 and 19 are unpatentable under 35 U.S.C.§103(a) over Lewis in view of Kolom and Prevorsek et al., as applied to claims13 and 17 above, and further in view of Gettle et al. (USP 5,225,622);

D. whether claims 31-33, 35-43 and 46-49 are unpatentable under 35 U.S.C.§103(a) over Morrison (USP3,093,259) in view of Prevorsek et al.;

E. whether claims 44 and 45 are unpatentable under 35 U.S.C.§103(a) over Morrison in view of Prevorsek et al., as applied to claim 39 above, and further in view of Gettle et al.;

F. whether claim 50 is unpatentable under 35 U.S.C.§103(a) over Morrison in view of Prevorsek et al., as applied to claim 39 above, and further in view of Sholl;

G. whether claim 51 is unpatentable under 35 U.S.C.§103(a) over Kolom in view of Sholl; and

H. whether claim 52 is unpatentable under 35 U.S.C.§103(a) over Kolom in view of Prevorsek et al.

VII. GROUPING OF CLAIMS

Claims 1-6, 8-13, 16, 17, 20-23, 25-31 and 34 are grouped together by the Examiner. Appellants respectfully submit that claims 31 and 34 should not be grouped with the balance of these claims since they are directed to an independent, but related, invention, i.e., these claims, as a whole, do not stand or fall together.

Claims 31-33, 35-43 and 46-49 are also grouped together by the Examiner. Appellants respectfully submit that claims 39-43 and 46-49 should not be grouped with the balance of these claims since they are directed to an

independent, but related, invention, i.e., these claims as a whole, do not stand or fall together.

VIII. ARGUMENTS

With reference to the claims groupings, there are two instances where the Examiner has grouped independent claims together. Claims 1 and 31 are grouped for rejection, as in Section VI.A., and claims 31 and 39 are grouped for rejection, as in Section VI.D.

With reference to claims 1 and 31, the constraining band of claim 1 has two ends that are required to be connected to one another, whereas the barrier unit of claim 31 has no such requirement. It is submitted that these claims and those dependent therefrom should therefore be considered independently.

With reference to claims 31 and 39, the container assembly of claim 39 includes a cover that is required to be connected to the container wall, whereas the barrier unit of claim 31 has no such requirement. It is submitted that these claims and those dependent therefrom should therefore be considered independently.

In each instance, the barrier unit of claim 31 is considered by Appellants to be broader in scope than either of claims 1 or 39.

A. Are claims 1-6, 8-13, 16, 17, 20-23, 25-31 and 34 unpatentable under 35 U.S.C. §103(a) over Lewis (USP 674,009) in view of Kolom (USP 5,054,635) and Prevorsek et al. (USP 5,545, 455)?

The references, alone or together, neither teach nor suggest the constraining band of claims 1-6 and 8-12; the container assembly of claims 13, 16-17, 20-23, and 25-30; or the barrier unit of claims 31 and 34, for the reasons that follow.

Lewis teaches a knockdown paper box. Lewis fails to disclose the pin required by Appellants' claimed invention. Lewis further fails to disclose the loops required by Appellants' claimed invention. Lewis also fails to disclose the fibrous material and its orientation required by Appellants' claimed invention. These elements are at the heart of Appellants' invention.

The fibrous constraining band of claim 1 (and thus, of claims 2-6, 8-12, 13, 16-17, 20-23, and 25-30) is required to be connected to itself. This permits the band to be mechanically closed and thus, to provide strength and energy

absorption characteristics similar to that of continuous bands. See page 11, lines 11-14, of the specification. The fiber orientation in the hoop direction of the band and in the loops (forming knuckles) especially enhances the strength and energy absorption characteristics of the band.

The barrier unit of claim 31 (and thus, of claim 34) is not required to be connected to itself; however, the unit does require integral loops having fiber content in a particular orientation for strength, which is neither taught nor suggested by Lewis.

Kolom teaches to connect parts with a pin extending through loops. Steel, aluminum, titanium or multi-strand filament are all mentioned as suitable materials for the hinge pin. There is absolutely nothing in Kolom to suggest that the loops can or should be fibrous, or that 50 weight percent of the fiber comprises substantially continuous lengths in the hoop direction of the loops. There is also absolutely nothing in Kolom to suggest the use of a high strength fiber for the hinge pin. Kolom therefore fails to meet the deficiencies of Lewis. Specifically, neither Lewis nor Kolom teaches the use of fibrous loops wherein part or all of the fibers are oriented in a particular fashion. See Kolom at column 5, lines 54-56, where it states that the same material need not be used for the hinge joint and the tank sections.

Furthermore, the purpose of Lewis is to provide a very strong and stiff box or receptacle made up from three separate and distinct telescoping parts (page 1, lines 15-18) that can be pressed out flat for packing or shipment (page 1, lines 9-14). The Examiner proposes to modify Lewis' one piece section A by using Kolom's hinge-with-pin system. Such a modification would change an attractive one piece Section A into a four piece section connected with four hinges-with-pins. Thus, modified Section A comprises eight total pieces (four box sides + four pins). This modification more than triples the primary reference's number of box parts, i.e. from three parts (Sections A, B, and C) to ten parts (Section A1, Section A2, Section A3, Section A4, four pins, Section B, and Section C) and is contrary to the teachings of Lewis, i.e., a knockdown paper box. As a result, a person skilled in the art would not be led to such a modification.

Prevorsek et al. discloses the use of high strength fibers to make a rigid composite that can be used to make a container. While the fibers taught by Prevorsek et al. could be used in Appellants' claimed invention, there is

absolutely nothing to suggest the use of fibrous hinges, knuckles, etc., or the fibrous integral loops with a connecting pin. And even if there was a suggestion that pieces of the rigid composite could be connected with a hinge (Kolom), there is nothing to suggest that the knuckles or loops of such a hinge should be formed with fiber, the orientation of the fiber, or the pin materials claimed by Appellants. As such, Prevorsek et al. fails to meet the deficiencies of Lewis and/or Kolom.

In summary, there is no motivation to combine the teachings of Kolom or Prevorsek et al. with Lewis, and none of the references teaches or suggests the use of the integral fibrous loops.

B. Are claims 7 and 24 unpatentable under 35 U.S.C.§103(a) over Lewis in view of Kolom and Prevorsek et al., as applied to claims 1 and 17 above, and further in view of Sholl (USP 3,611,512)?

Claim 7 depends directly from claim 1, while claim 24 indirectly depends from claim 1. Both claims should therefore be allowable for the reasons set forth above with regard to Lewis, Kolom and Prevorsek et al. Furthermore, while Sholl teaches the use of rope or cord to connect two sides of a latch, there is nothing to suggest its use in lieu of a pin for a hinge. The function of the flexible member 24 (element 22 is believed to represent a hole) in Sholl is very different from that of a hinge pin. Member 24 of Sholl is meant to permit a large relative movement of the latch members that it connects. In Appellants' invention, however, the pin is meant to hold the loops/hinge knuckles together in a manner that resists permanently pulling apart. There is thus no motivation to combine Sholl with the other references.

C. Are claims 14-15, 18 and 19 unpatentable under 35 U.S.C.§103(a) over Lewis in view of Kolom and Prevorsek et al., as applied to claims13 and 17 above, and further in view of Gettle et al. (USP 5,225,622)?

Claims 14-15, 18 and 19 indirectly depend from claim 1 and should therefore be found allowable for the reasons set forth above with respect to Lewis, Kolom and Prevorsek et al.

D. Are claims 31-33, 35-43 and 46-49 unpatentable under 35 U.S.C.§103(a) over Morrison (USP3,093,259) in view of Prevorsek et al.?

Morrison is cited by the Examiner as disclosing Appellants' claimed device except for the band and pin material. This is not so. Morrison states at column 2, lines 24-26, that the eyelets (akin to Appellants' loops) are attached to the panel block. This means that the eyelets are not integral with the surface panels to be connected, as required by Appellants' claims. There is therefore no motivation to combine this reference with Prevorsek et al. which only teaches use of the high strength material for use in the container surfaces, and also fails to mention integral fibrous loops.

E. Are claims 44 and 45 unpatentable under 35 U.S.C.§103(a) over Morrison in view of Prevorsek et al., as applied to claim 39 above, and further in view of Gettle et al.?

Claims 44 and 45 indirectly depend from claim 39 and should therefore be found allowable for the reasons set forth above with respect to Morrison and Prevorsek et al.

F. Is claim 50 unpatentable under 35 U.S.C.§103(a) over Morrison in view of Prevorsek et al., as applied to claim 39 above, and further in view of Sholl?

Appellants respectfully traverse this rejection on the basis of the discussion of Morrison in view of Prevorsek et al. as applied to claim 39 above, and further in view of the discussion of Sholl as applied to claims 7 and 24 above.

G. Is claim 51 unpatentable under 35 U.S.C.§103(a) over Kolom in view of Sholl?

Kolom teaches hinge knuckles connected by a pin. Sholl, however, teaches a flexible member for connecting latch members. It is respectfully submitted that there is no motivation to combine these references since the function of the connecting member is different.

H. Is claim 52 unpatentable under 35 U.S.C.§103(a) over Kolom in view of Prevorsek et al.?

Kolom teaches a container assembly. Prevorsek et al. teaches the use of fibrous material to form rigid composite panels. There is absolutely nothing to

suggest that the fibrous material of Prevorsek et al. would be appropriate for the Kolom container assembly hinge knuckles.

CONCLUSION

For the reasons stated, Appellants respectfully submit that the claims on appeal, i.e., claims 1-52 should be found allowable.

Respectfully submitted,
IGOR PALLEY ET AL.

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I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICES AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER OF PATENTS & TRADEMARKS, WASHINGTON, D.C. 20231

ON: **November 30, 2000**
DATE
Virginia Szigeti Andrews
NAME OF APPLICANT, ASSIGNEE OR APPLICANT'S ATTORNEY
Virginia Szigeti Andrews
SIGNATURE

November 30, 3000
DATE

IX. APPENDIX - CLAIMS

1. A constraining band, comprising:

a band, said band having a length and a width and comprising at least one network of fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d, at least about 50 weight percent of said fiber comprising substantially continuous lengths of fiber along the length of said band, said band being interrupted across the length thereof to create two ends, each of said ends comprising at least one integral loop; and

a pin, said pin connecting the loops of said two ends to one another.

2. The constraining band of claim 1 wherein the loops are coaxially aligned for connection.

3. The constraining band of claim 1 wherein the pin comprises a rigid material inserted through the loops to close the band, said material being selected from the group consisting of metals; plastics; ceramics; wood; fiber-reinforced composites; and combinations thereof.

4. The constraining band of claim 1 wherein the pin comprises a rigid metal inserted through the loops to close the band, said metal being selected from the group consisting of steel, steel alloys, aluminum, aluminum alloys, titanium, and titanium alloys.

5. The constraining band of claim 1 wherein the pin comprises a rigid fiber-reinforced composite inserted through the loops to close the band, said reinforcing fiber being selected from the group consisting of aluminum fibers, aluminum alloy fibers, titanium fibers, titanium alloy fibers, steel fibers, steel alloy fibers, ceramic fibers, extended chain polyolefin fibers, aramid fibers,

polybenzoxazole fibers, polybenzothiazole fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers and mixtures thereof.

6. The constraining band of claim 1 wherein the pin comprises a flexible material inserted through the loops to close the band, said flexible material comprising fiber selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polybenzoxazole fibers, polybenzothiazole fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

7. The constraining band of claim 1 wherein the pin comprises a flexible material inserted through the loops to close the band, said flexible material being selected from the group consisting of rope; roving; unitape; shield; braid; belt; fabric; and combinations thereof.

8. The constraining band of claim 1 wherein substantially all of the fibrous material in said loops comprises continuous lengths of fiber aligned in parallel and in the hoop direction of said loops.

9. The constraining band of claim 1 wherein the network of fibers is in a resin matrix.

10. The constraining band of claim 9 wherein substantially all of the fibrous material in said loops comprises continuous lengths of fiber aligned in parallel and in the hoop direction of said loops.

11. The constraining band of claim 10 wherein all of the substantially continuous lengths of fiber in the band are included in the loops of each end.

12. The constraining band of claim 1 wherein the network of fibers comprises fiber selected from the group consisting of extended chain polyolefin

fibers, aramid fibers, polybenzoxazole fibers, polybenzothiazole fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

13. A container assembly, comprising the constraining band of claim 1 in combination with a container, said constraining band encircling the container to make the container blast resistant.

14. The container assembly of claim 13 further comprising blast mitigating material located within the container.

15. The container assembly of claim 14 wherein the blast mitigating material comprises an aqueous foam.

16. The container assembly of claim 13 further comprising a second band of fibrous material encircling the container to cover the interrupted band where the loops are connected to one another.

17. The blast resistant container assembly of claim 13 wherein the container has at least one access opening, and wherein said constraining band encircles the container to cover said access opening.

18. The container assembly of claim 17 further comprising blast mitigating material located within the container.

19. The container assembly of claim 18 wherein the blast mitigating material comprises an aqueous foam.

20. The container assembly of claim 17 further comprising a second band of fibrous material encircling the container to cover the interrupted band where the loops are connected to one another.

21. The container assembly of claim 17 wherein the loops are coaxially aligned for connection.

22. The container assembly of claim 17 wherein the pin comprises a rigid material inserted through the loops to close the band, said material being selected from the group consisting of metals; plastics; ceramics; wood; fiber-reinforced composites; and combinations thereof.

23. The container assembly of claim 17 wherein the pin comprises a flexible material inserted through the loops to close the band, said flexible material comprising fiber selected from the group consisting of extended chain polyolefin fibers, aramid fibers polybenzoxazole fibers, polybenzothiazole fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers carbon fibers, and mixtures thereof.

24. The container assembly of claim 17 wherein the pin comprises a flexible material inserted through the loops to close the band, said flexible material being selected from the group consisting of rope; roving; unitape; shield; braid; belt; fabric; and combinations thereof.

25. The container assembly of claim 17 wherein substantially all of the fiber in said loops comprises continuous lengths of fiber aligned in parallel and in the hoop direction of said loops.

26. The container assembly of claim 17 wherein the network of fiber is in a resin matrix.

27. The container assembly of claim 26 wherein a portion of said band encircling the container is integral with the container.

28. The container assembly of claim 27 wherein substantially all of the fibrous material in said loops comprises continuous lengths of fiber aligned in parallel and in the hoop direction of said loops.

29. The container assembly of claim 28 wherein all of the substantially continuous lengths of fiber in the band are included in the loops of each end.

30. The container assembly of claim 26 wherein the band is interrupted adjacent to said access opening.

31. A barrier unit comprising a surface, said surface having a regular polygonal perimeter with a plurality of substantially parallel sides, each of said parallel sides terminating in at least one loop integral with the surface, said surface comprising at least one network of fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d, at least about 50 weight percent of said fiber comprising substantially continuous lengths of fiber aligned in the hoop direction of said loops.

32. The barrier unit of claim 31 wherein the network of fiber comprises fiber selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polybenzoxazole fibers, polybenzothiazole fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

33. The barrier unit of claim 31 wherein the network of fiber is in a resin matrix.

34. The barrier unit of claim 31 in combination with a second barrier unit, said second barrier unit comprising at least one side terminating in an integral loop that is coaxially aligned with and connected via a pin to one of the integral loops of the first barrier unit.

35. The barrier unit of claim 31 wherein said regular polygonal surface is rectangular.

36. The barrier unit of claim 31 wherein substantially all of the fibrous material in said loops comprises continuous lengths of fiber aligned in parallel and in the hoop direction of said loops.

37. The barrier unit of claim 31 wherein the network of fibers comprises fiber selected from the group consisting of extended chain polyolefin fibers, aramid fibers, polybenzoxazole fibers, polybenzothiazole fibers, polyvinyl alcohol fibers, polyacrylonitrile fibers, liquid copolyester fibers, polyamide fibers, glass fibers, carbon fibers, and mixtures thereof.

38. The barrier unit of claim 31 wherein said regular polygonal surface is a rectangle having two sets of substantially parallel sides, each of said sides terminating in a plurality of spaced coaxial loops integral with the surface, and wherein the network of fibers comprises extended chain polyethylene fibers in a polymeric matrix.

39. A blast resistant container assembly, comprising:

a. a cover, said cover comprising a polygonal perimeter having first and second substantially parallel sides, each of said parallel sides terminating in at least one integral loop, said cover comprising at least one network of fiber having a tenacity of at least about 10 g/d and a tensile modulus of at least about 200 g/d, at least about 50 weight percent of said fiber comprising substantially continuous lengths of fiber that are substantially perpendicular to said first and second sides and aligned in the hoop direction of said loops;

b. a container, said container comprising a wall and an access opening in said wall, said wall comprising at least two integral loops on opposing first and second sides of said access opening;

c. means for connecting the loop on the first side of said cover with the loop on the first side of said access opening; and

d. means for connecting the loop on the second side of said cover with the loop on the second side of said access opening, with said cover overlaying said access opening.

40. The container assembly of claim 39 wherein the loops on the first side of the cover and the first side of the access opening are coaxial with one another for connection.

41. The container assembly of claim 39 wherein the loops on the second side of the cover and the second side of the access opening are in register with one another for connection.

42. The container assembly of claim 39 wherein substantially all of the fibrous material in said loops comprises continuous lengths of fiber aligned in parallel and in the hoop direction of said loops.

43. The container assembly of claim 39 wherein said perimeter forms a regular polygon.

44. The container assembly of claim 39 further comprising blast mitigating material located within the container.

45. The container assembly of claim 44 wherein the blast mitigating material comprises an aqueous foam.

46. The container assembly of claim 43 wherein said perimeter forms a rectangle.

47. The container assembly of claim 43 wherein the third and fourth sides of the rectangular cover each terminate in at least one loop, wherein said wall further comprises at least an additional two integral loops on opposing third and

fourth sides of said access opening, and wherein means are provided for connecting the loop on the third side of said cover with the loop on the third side of said access opening and for connecting the loop on the fourth side of said cover with the loop on the fourth side of said access opening.

48. The container assembly of claim 39 wherein the connecting means each comprises a pin, said pin comprising a rigid material inserted through the loops for connection.

49. The container assembly of claim 48 wherein the rigid material is a fiber-reinforced composite.

50. The container assembly of claim 39 wherein the connecting means each comprises a pin, said pin comprising a flexible material inserted through the loops for connection.

51. In a hinge comprising a pair of hinge halves terminating in coaxially aligned knuckles for connection with one another, the improvement comprising: a pin comprising a flexible material selected from the group consisting of rope; roving; unitape; shield; braid; belt; fabric; and combinations thereof.

52. In a container assembly comprising a container having a wall and an access opening in said wall, the improvement comprising: a hinge formed of fibrous material, said hinge comprising a pair of hinge halves terminating in spaced, coaxially aligned knuckles which are joined together by a pin to cover the access opening, a portion of said hinge halves being integral with and covering a portion of the container wall.